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Board of Legal Specialization

June 24, 1998

Magalie R. Salas
Secretary
Federal Communications Commission
1919 M. Street
Washington, D.C. N.W. 20554

VIA OVERNIGHT MAIL

Re: Docket No. CC-98-91, SBC Petition for Relief from Regulation Pursuant to Section 706 of the Telecommunications Act and 47 U.S.C. Section 160 for ADSL Infrastructure and Service

Dear Ms. Salas:

Enclosed for filing please find an original and four (4) copies of Comments of McCollough and Associates, P.C. on Petition for Relief in the above docket.

I filed a copy of the attached Comments at the Federal Communications Commission on June 24, 1998 without the exhibits. Enclosed please find the original signed copy with exhibits.

Please file stamp the additional copy and return it to me in the enclosed federal express packet.

Please call me if you have any questions. Thank you for your assistance in this matter.

Sincerely,

W. Scott McCollough by: Carrie Keese

W. Scott McCollough
Attorney at Law

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)
	)
Southwestern Bell Telephone Company, Pacific Bell and Nevada Bell Petition for Relief from Regulation Pursuant to Section 706 of the Telecommunications Act of 1996 and 47 U.S.C. for ADSL Infrastructure and Service	) **CC DOCKET NO. 98-91**

COMMENTS OF McCOLLOUGH AND ASSOCIATES, P.C. ON PETITION FOR RELIEF

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June 23, 1998

SUMMARY

McCollough and Associates, P.C. is a law firm in Austin, Texas. The firm represents CLECs, Internet Service Providers and other technology, and communications-related clients. As a result, the firm needs access to advanced means of connecting to data networks, including the Internet. McCollough and Associates, P.C. at present uses a variety of methods to do so, including ISDN and dedicated lines. These Comments are submitted on behalf of the firm, as an existing user and business that is interested in securing reasonable access to advanced technology and services.

The Petition submitted by the SBC family seeks relief under FTA96 § 706 and 47 U.S.C. § 160. Specifically, Petitioners request that the FCC exempt the SBC companies from

- Any unbundling obligations applicable to ADSL facilities;
- Any obligation to provide a wholesale discount on ADSL services
- Dominant treatment of ADSL service; and
- Any MFN obligation as applicable to "inconsistent agreements" as specified in the Petition.

Petition, pp. 5-6.

The requested relief should be denied at this time. In the alternative, the Commission should at least condition any relief on:

- Execution, state approval and implementation of Interconnection Agreements with CLECs that provide access to ADSL-capable loops on reasonable terms;
- Requiring the SBC companies to make ADSL end-user access to ISPs available on terms other than ISP use of the SBC ATM tariff; and
- Allowing ISPs to in some fashion package their data service with access to and use of ADSL-capable loops in combination with provision of voice service by the SBC company.

Further, the Commission should not rule that use of a loop to access a data service using ADSL technology is inherently or predominately interstate. The Commission should not effectively pre-empt the states from exercising regulatory authority over these loops or the services provided over them. Both the FCC and the states have jurisdiction, and each should be allowed to exercise their authority.

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Southwestern Bell Telephone Company, Pacific Bell	)	
and Nevada Bell Petition for Relief	)	**CC DOCKET NO. 98-91**
from Regulation Pursuant to Section 706 of the	)	
Telecommunications Act of 1996 and	)	
47 U.S.C. for ADSL Infrastructure and Service	)	

COMMENTS OF McCOLLOUGH AND ASSOCIATES, P.C. ON PETITION FOR RELIEF

McCollough and Associates, P.C. submits these Comments on the Petition for Relief submitted by the SBC family. The Commission should deny relief or at least condition any relief as explained below. Further, the Commission should not preclude the States from exercising their regulatory authority over services that are not interstate.

We will demonstrate below that Petitioners have not made ADSL-capable loops available to competitors on reasonable terms; that, at least in Texas, SBC faces little or no "ADSL" competition - by CLECs or ISPs, and has acted in various ways to preclude such competition. As far as we can determine, there is not even one existing interconnection agreement in Texas that specifically address ADSL-capable loops, so there are no "inconsistent" agreements requiring "grand fathering." Further, SBC's experimental and forthcoming retail offering precludes meaningful participation by ISPs. It is too soon to grant any of the requested relief.

I. SBC HAS LITTLE OR NO MEANINGFUL COMPETITION FOR "ADSL SERVICES" IN TEXAS

SBC Petition asserts that there is widespread and healthy competition for ADSL services in its entire territory. While there may be some competition in California, there is little or no competition in Texas. The reason is that SBC has refused to make ADSL-capable loops available to CLECs on reasonable terms and has refused to allow ISPs to order circuits that could be used to provide ADSL. Granting relief now would ensure that there will be only one significant ADSL service provider in Texas – SBC – if and when the Company actually offers the service on a retail basis.

SBC could find only one alleged provider of ADSL in Texas, and that company does not, in fact, provide ADSL service. A careful reading of SBC's Petition shows that the Petitioners could only point to one alleged provider of ADSL. At page 17, SBC claims that "Netspeed has been offering ADSL service in Austin, Texas since January 1997." This is not correct. Netspeed (recently acquired by Cisco) is an equipment provider and does not provide any services to end users. *See*, Exhibit 1. Exhibit 2 is a print out of a web page from the ADSL forum. It indicates that GTE will offer ADSL service in Irving and Dallas; that SBC is conducting a trial in Austin and Houston[1]; and a company called Signet Partners allegedly provides ADSL service in Austin, Houston and San Antonio. Signet Partners, however, was acquired by Verio, a national ISP.[2] Finally, the Valley Telephone Cooperative in the Rio Grande Valley area west and south of San

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[1] A copy of SWBT's Texas intrastate experimental tariff for ADSL is attached as Exhibit 3.

[2] Verio's web site reveals that ADSL services are offered in California, but there is no mention of Texas. *See*, Exhibit 4.

Antonio, Texas, appears to be deploying ADSL in its service territory. This is not meaningful competition.

The question is, therefore, why ADSL is not available in Texas to a significant number of users. And the answer is that SBC has taken action to squelch that competition. It will not let CLECs deploy ADSL, except over very expensive 4-wire digital unbundled loops. SBC has no distinct retail offering subscribers can use to get to an ISP (or that an ISP can order on behalf of a user). Finally, SBC has refused to make "dry" copper pair available to either CLECs or ISPs.

SBC "commits" to providing ADSL-capable unbundled loops to CLECs. Note the future tense. At present, there does not appear to be a single approved interconnection agreement in Texas that explicitly provides for this type of unbundled loop. Indeed, SBC ***prohibits*** CLECs from using 2-wire loops to deliver ADSL. *See*, Exhibit 5, Transcript page 790-791.[3] A CLEC that wishes to provide ADSL must purchase a **4-wire digital loop** from SWBT, at a cost of $105 per month. Exhibit 4, Tr. Pp. 813-815.[4]

SBC has succeeded in preventing deployment of ADSL by competitors; as a result there is no meaningful competition in Texas for this service. No relief should be granted until SBC demonstrates it has made ADSL-capable unbundled loops available to competitors on reasonable terms.

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[3] Exhibit 5 is composed of excerpts from SBC's Texas § 271 proceeding. We have located all the transcript pages where ADSL is discussed.

[4] A CLEC that wants to offer ADSL, or even simple 56kbps service, may end up with a 4-wire DS1 that is provisioned using HDSL. Exhibit 5, Transcript pages 814, 817. This is a ridiculous, expensive and wasteful approach since the CLEC merely needs a copper loop without loading coils, bridge taps or pair gain systems. Petition, pp. 9-10. SBC has refused to create a UNE that can be used to provide these services. *See*, Exhibit 6.

ISPs desiring to provide ADSL service cannot do so, at least with SBC's knowledge. Since ISPs cannot provide local telephone service without certification, they do not actually carry circuit-switched voice calls. The most prevalent manner of provision at this time is through SWBT's intrastate private line tariff offering designed for burglar alarm circuits. Anecdotal stories by several ISPs on Internet discussion lists and Usenet indicate that SBC is beginning to refuse to provide these circuits (or any other type of circuit out of intrastate or interstate tariffs) to ISPs. We have also heard of situations where SBC would not remove loading coils, bridge taps or pair gain devises at the request of an ISP desiring to use the burglar alarm circuit for ADSL.

It is essential that CLECs and ISPs have access to basic loops that are ADSL-capable. SBC has adamantly refused to make them available. The SBC companies cannot be deregulated in this service market until there is an established means for both CLECs and ISPs to use SBC's copper plant, on a wholesale and retail basis, to provide ADSL services.

II. SBC MUST HAVE AN UNBUNDLED RETAIL OFFERING THAT IS SUBJECT TO RESALE

SBC has only an experimental offering for ADSL service in Texas. The tariff is attached as Exhibit 3. As can be seen, in order to make high-speed Internet access available, an ISP must subscribe to SBC's ATM tariffs. *See also*, Petition, pp. 7, 21. In other words, an ISP cannot get access to a subscriber's ADSL loop at the DSLAM, allow the voice traffic to flow through the PSTN and take the data traffic over its own network. SBC "bundles" access to the ADSL loop with its ATM offering. This approach is consistent with PacBell's California offerings, and GTE's proposed tariff.

ISPs should not have to buy SBC's fast packet service to get access to the ADSL loop. The Commission must allow ISPs to collocate their equipment (DSLAM) at SBC end offices and take the data traffic over their own networks. Alternatively, the Commission should at least allow ISPs to connect to SBC's DSLAM in each CO.[5]

We oppose any relaxation of the duty to make these services available for resale. Until there is actual competition through alternative land line facilities and/or UNEs, SBC will be the only game in town.[6]

III. ADSL IS NOT INHERENTLY INTERSTATE

The Commission should reject SBC's attempt to pre-empt the states from exercising regulatory authority over these loops or the services provided over them. Both the FCC and the states have jurisdiction, and each should be allowed to exercise their authority.

SBC states that "(i)nasmuch as Internet traffic is predominately interstate in nature, the SBC LECs will file interstate tariffs to offer ADSL services." Petition, p. 22. SBC's statement concerning the "jurisdictional nature" of Internet traffic is unsupported and factually and legally incorrect.

The ADSL loop itself is typically a regular subscriber line - a common line - that will be used for basic voice service (local, intrastate toll and interstate toll) along with data. The costs of

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[5] We believe both options should be available. ISPs should be able to use their own equipment, and not be tied to Alcatel equipment, which is SBC's supplier. Petition, p. 6, note 5. The Commission is studying ESP interconnection and UNE rights in the *Computer III* remand, and should decide these issues before it grants any relief to SBC in this case.

[6] The existence of alternative means of high-speed access through cable and satellite does not justify the relief sought. These services have not been deployed on a wide-spread basis or are prohibitively expensive.

this loop are assigned to both the state and interstate jurisdictions under separations. "Data" usage over this line will be both interstate and intrastate. While there may be circumstances where data over a ADSL loop will be predominately or solely for interstate traffic, there will also be times when the ADSL loop is used for purely intrastate traffic, such as when the loop is connected to a private LAN.[7]

The fact that some data traffic over ADSL loops will ultimately go over the Internet does not render ADSL service exclusively interstate. In the first place, most of the time the circuit will not be sending or receiving any traffic, and when there is traffic, a significant portion will remain within the state. One of the SBC companies told the Texas PUC that **99%** of user traffic going to the SBC Internet subsidiary would be jurisdictionally intrastate. *See*, Exhibit 7. Second, this Commission has ruled that the telecommunications services used to access the Internet are segregable from the enhanced (Internet access) services provided using the telecommunications service. *In Re Federal-State Joint Board on Universal Service, 12 F.C.C.R. 8776 ¶¶ 64, 73, 83 (Rel. May 8, 1997).* Even if the Internet is deemed to be an interstate network, that does not dictate that ADSL loops and services must be provided only out of a federal tariff.

While a federal tariff may be appropriate, the Commission should be careful to not directly or indirectly pre-empt the states from exercising their legitimate jurisdiction over intrastate communications. The FCC need not make any jurisdictional findings to dispose of the Petition.

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[7] SBC acknowleges that an ADSL loop can connect to networks other than the Internet. Petition, p. 9. *See also*, Exhibit 3, p. 5.

CONCLUSION

SBC should not be granted any of the relief it seeks, at least until there is actual, sustainable competition for ADSL service using land-line facilities. ISPs and CLECs must be allowed to provide services using SBC's plant, on both a retail and unbundled basis, and resale must be allowed. Any retail offering must be sufficiently unbundled to allow an ISP to not use SBC's ATM network in order to access an SBC-provided ADSL. ISPs should be allowed to collocate their equipment at end offices so they are not required to use the equipment provided by SBC's chosen vendor.

The way to get advanced services deployed is to enforce FTA96, and ensure that ISPs and CLECs have access to ADSL-capable loops at the wholesale and retail levels. Freeing SBC as requested in the Petition will retard, not advance, general ADSL availability.

The Petition should be denied. Alternatively, any relief should be conditioned on fulfillment of the terms discussed above.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I certify that a true and correct copy of the foregoing Comments was served on all parties of record by U.S. Mail, postage prepaid.

W. Scott McCollough

EXHIBIT 1

Get Connected

Frequently Asked Questions about getting ADSL service

Can you tell me about your ADSL service?

We are a manufacturer of ADSL equipment that allows service providers to offer ADSL service to customers. You'll have to contact your telephone company or local ISP and see if they are offering an ADSL service. If they are, then they will provide you with both the service and the equipment required at your home or office.

I'm already getting Internet access through an ISP. Can they provide me with ADSL service, or do you know of any ISPs in my area that are offering ADSL?

Currently, two telephone companies are offering ADSL service using NetSpeed's ADSL technology - U S WEST and TELUS. Visit our Get Connected area to get the latest updates on service providers offering ADSL.

Do I purchase my ADSL modem from NetSpeed or from my service provider?

From your service provider. Currently, we do not sell our modems directly to customers. Service providers sell an ADSL service "package" that includes everything you need to get connected, including a NetSpeed modem.

Do I have to be within a certain distance from my provider to get ADSL service?

You need to be within 18,000ft of one of your telephone company's central offices. Telephone companies have multiple central offices throughout their region to reach their customers.

Will your modems work in my MAC?

Our external SpeedRunner modems, running in bridge mode, will work with Mac's, provided the Macs have an Ethernet NIC port installed.

What equipment will I need to have at my home or office in order to support an ADSL service?

Below are the NetSpeed products appropriate for various types of users. Also, our website contains a Product and Technologies section that will give you detailed information on our complete end to end ADSL product line. Keep in mind that when you purchase an ADSL service package from your service provider, they can help you identify the appropriate product.

Home or Office End user equipment	Telephone Company equipment	ISP equipment
Typically one: SpeedRunner 202 PCI Runner SpeedRunner 300 (for Corporate use) FireRunner (for Corporate and ISP use)	LoopRunner FireRunner	FireRunner

For more frequently asked questions about ADSL, click here.

NetSpeed, Inc. | 12303 Technology Blvd. | Austin, TX 78727
1-800-550-ADSL 1-512-249-8055

EXHIBIT 2

ADSL Trials and Service Deployments

May 26, 1998

ADSL Trials and Service Deployments

United States | Europe | Canada | Latin America | Middle East/Africa
Asia/Pacific | Multi-tenant Buildings & Other ADSL Installations

Revised: May 26, 1998

You may also download a copy of this matrix in Excel by clicking HERE

UNITED STATES:

Company	Availability	Speed	Applications	Trial Dates	Service Deployment
Advanced Corporate Solutions (NSP) (see Transport Logic on next page)	Pacific Northwest	Down*: up to 2.5Mbps; Up: up to 1Mbps	Internet/LAN Access, Video Streaming, Desktop Video, E-Commerce, Telecommuting	N/A	Service Rolled out April 1997
ALLTEL (CLEC & ISP)	Dalton, GA and Hudson, OH	Down: 1.5 Mbps; Up: 64 kbps	Internet/LAN Access	Tech/Mkt Trial: Sept. 96 to Feb. 97 Phase 2: Begins 2nd Quarter 97	Not Announced
	Harrison, Ark.		Internet/LAN Access	Mkt Trial: Nov. 97 to June 98	
All West Communications	Kamas, Utah	Down*:up to 2.5 Mbps; Up:up to 1 Mbps	Internet/LAN Access	Field Trial: Jan.98-Ongoing	Plans to deploy ADSL service in 1999
America Online (Online Service Provider)	Birmingham, AL; Phoenix; Greater Bay Area, CA, N. Virginia suburbs of Wash. DC; Redmond, WA	Varies by area: downstream rates up to 1.5 Mbps	AOL/Internet Access	April 1998-Ongoing	AOL expects the number of trial locations and participants to grow over the next several months
	Ann Arbor, MI	Down: 1.5 Mbps;	Internet/LAN	Concept	Limited Rollout in

Ameritech (ILEC)		Up: 128 kbps	Access	Trial: Oct. 96 to Apr. 1997	Ann Arbor in Dec. 97; to be expanded to Chicago area in mid-1998; plans to make ADSL available to 70% of customers by the year 2000
Ameritech and IBM	Wheaton, IL (Chicago)	Down: 1.5Mbps; Up: 64kbps	Internet/LAN Access	Concept Trial: Oct. 96 to Apr. 1997	
AUSNet Services (ISP)	Portland, OR	Down*: 2.6-7 Mbps; Up: 92-972 kbps	Internet/LAN Access		February 97
Avalon Networks, Inc. (ISP)	Iowa City, Iowa	Down: Exceeding 1 Mbps; Up: 64 Kbps	Internet/LAN Access	Market Trial: Nov.97-March 98	Began offering commercial service in March 1998
Bay Junction Technology, Inc.(ISP)	San Jose, CA	Down: 1.5 Mbps;	Internet/LAN Access	N/A	December 97 rollout
Bell Atlantic (ILEC)	Northern Virginia	Down: 1.5 Mbps; Up: 64 kbps	Internet Access	Mkt Trial: Sept. 1996-Ongoing	Rollout in mid-1998 of RADSL service up to 7 Mbps downstream
	Fairfax County, VA	Down: 1.5 Mbps; Up: 64 kbps	Video on Demand	Mkt Trial: May 95 - late 96	
Bell Atlantic & Carnegie-Mellon Univ.	Pittsburgh, PA	Down: 1.5 Mbps; Up: 64 kbps	Telemedicine, Distance Learning, "Net/LAN Access"	July-Feb 1998	
BellSouth (ILEC)	Atlanta, GA	Down: 6 Mbps; Up: 64 kbps	Internet/LAN Access, Telecommuting	Tech Trial: Oct. 95-Ongoing	Will begin deployment August 1998 in New Orleans, Atlanta, Birmingham, Jacksonville, Raleigh, Charlotte and Ft. Lauderdale. Plans to offer ADSL in 23 other Southeastern markets in 1999.
	Brimingham, AL	640 kbps		Mkt Trial: Oct. 97-May 98	
BellSouth and Siemens Telecom	Palm Beach & Broward Counties, FL		Telecommuting	Tech.Trial: April 1998-Ongoing	Ft. Lauderdale, plans to offer ADSL in 23 other Southeastern markets in 1999
Branch Internet Services (ISP)	Ann Arbor, MI	Down*: Up to 2 Mbps; Up: 1 Mbps	Internet/LAN Access, Desktop Video Conferencing	June 1 - July 15, 1997	August 1997
Cincinnati Bell (CLEC/ISP "Fuse")	Cincinnati, OH	Down*: 1.5Mbps-6Mbps; Up: 150kbps - 400kbps	Internet/LAN Access	Jan. 97-Ongoing	Trial to be expanded significantly in Jan. 98 w/150 lines available for ISPs and corporate intranets
CommTel (independent telephone co.)	Winthrop, Maine	Down: 7Mbps; Up: 1Mbps	Internet and Live Video	Market Trial: Dec. 97 - Feb. 98	Company expects to have first customers connected by year-end '98
Concentric	10 cities in	Down: 1.5Mbps;	Internet/LAN	N/A	Launched ADSL in 10

Network Corp. (ISP)	Northern California	Up: 384kbps or 384kbps in both directions	Access		Northern California cities in November 1997
Covad Communications Inc. (CLEC)	San Francisco Bay Area and Silicon Valley	384 Kbps in both directions; 1.1 Mbps in both directions or Down: 1.5 Mbps/Up: 384 Kbps	Internet/LAN Access	N/A	Launched ADSL service in Dec. 1997. Available to 700,000 homes, businesses; plans to offer ADSL to 5 million more in Boston, New York, Washington DC, Los Angeles & Seattle by March 1999
DNAI (ISP)	Danville, San Ramon and Silicon Valley	Down:1.5Mbps; Up: 384kpbs or 384kpbs in both directions	Internet/LAN Access	N/A	Launched ADSL in Dec. 1997
Dakota Services Limited (CLEC/NSP)	Milwaukee, WI	Down*: up to 2.5Mbps; Up: 1Mbps in both directions	Internet/LAN Access	N/A	July 1997
easy.net (ISP)	Denver, CO	Down*: 640kbps-2.5Mbps; Up: 272kbps-1Mbps	Internet/LAN Access, Multimedia, Telecomm., Distance Learning	N/A	August 18, 1997; speeds up to 7Mbps expected to be available soon
Elkhart Telephone Company	Elkhart, Kan.	Down*: Up to 2.5 Mbps; Up: up to 1 Mbps	Internet/LAN Access		February 1998 rollout to business and residential customers. Will offer video conferencing in the near future
Epoch Internet (ISP)	Northern California, San Francisco Bay Area	Down: Up to 1.5 Mbps	Internet/LAN Access		Rolled out ADSL service in March 1998
Global 2000 Communications (ISP)	Albany, Schenectady, Troy, Glens Falls and Plattsburg, NY	Down: 256 Kbps-10 Mbps: Up to 256 Kpbs-1Mbps	Internet/LAN Access		ADSL service deployed in April 1998
GTE Communications Corp. (newly formed CLEC Subsidiary)	Southern Calif. (Marina del Ray)	Business Down*:1.5 Mbps; Up:384 kbps Residential Down: 680kbps; Up: 256kbps	Internet/LAN Access		GTE Com. commercially deployed ADSL Mid. Nov. 1997 in So. Calif. and will offer ADSL in "numerous key Markets" throughout the US in 1998; GTE Network Services plans to convert its ADSL trials into broad-market deployments at downstream speeds up
GTE Network Services	Irving, TX (Dallas/Ft. Worth)	Down: 1.5 Mbps; Up: 64 kbps	Internet/LAN Access	Mkt Trial: Feb. 96	
GTE & Microsoft	Redmond, WA	Down: up to 6	Telecommuting/Net	Mkt Trial:	

		Mbps; Up: 384 kbps	Access	Feb. 96-Ongoing	to 1.5 Mbps in Redmond and Kirkland, Wash., Durham, NC, W. Lafayette, Ind., and Beaverton, OR by June 1998. During the second half of 1998, GTE plans to offer ADSL in at least 30 additional market clusters in 16 states.
GTE & Duke University	Durham, NC	Down: up to 6 Mbps; Up: 384 kbps	Internet/LAN Access	Mkt Trial: Nov. 96	
GTE & Purdue University	Lafayette, IN	Down: up to 6 Mbps; Up: 384 kbps	Internet/LAN Access	Mkt Trial: Nov. 96	
Harrisonville Telephone Co.	Waterloo, Iowa	Down: 1.5 Mbps; Up: 72 Kbps	Internet/LAN Access	Market Trial: March 1998 Ongoing	Not yet announced
Harvard Net (ISP, CLEC)	Major Metropolitan in Mass., Maine & NH	Down*: 2.5-7 Mbps	Internet/LAN Access, Telecommuting	N/A	SDSL services converted to rate-adaptive; ADSL in 4th Quarter 1997
ICG Communications, Inc. (CLEC)	Colorado, California, Ohio Valley & parts of Southeastern U.S.		Internet/LAN Access		March 1998 launch
Intelecom Data Systems (ISP)	Rhode Island	Down*: 640kbps-2.5Mbps; Up*: 275kbps-1.08Mbps	Internet/LAN Access, Video Streaming, Desktop Video Conferencing, Telemedicine	N/A	March 1997 in Rhode Island; plans to expand to other NE areas
InterAccess (ISP)	Chicago, IL	Down*: 1.5 Mbps; Up: 64 kbps	Internet Access	N/A	Sept. 1996
Interastate Telephone	Westpoint, GA	Down*: up to 7Mbps; Up: up to 1Mbps	Internet/LAN Access w/VPN	N/A	4th Quarter 1997
ioNET Inc. (NSP)	Oklahoma City and Tulsa	Down*: up to 7 Mbps; Up: up to 1Mbps	Internet/LAN Access	N/A	Mid-summer 97 in Oklahoma City and Tulsa Kansas City, Little Rock, Austin, Dallas, Houston & San Antonio soon thereafter
LEACO Rural Telephone Cooperative	Schools in Southeastern New Mexico		Internet Access	N/A	Began providing ADSL service for SE New Mexico schools in late July 1997
MCI Comm Corp. (IXC), with partners NW Iowa Telep. & NW Iowa Power Cooperative	Iowa	Down*: 7Mbps; Up: 640 kbps or 786 kbps in both directions	Internet/LAN Access	See entry below for trial information	Aug 1997 in Iowa; will add rural areas in 10 states; nationwide by early 1998

MCI Comm. Corp. (IXC)	Sergeants Bluff, Iowa	Down: 1.5-6 Mbps; Up: 64 Kbps Down: 7Mbps; Up: 640kbps	Internet/LAN Access	April 1997-Ongoing; also conducting trials in New York City and Detroit	See entry above for service deployment information
Network Access Solutions (CLEC)	Mid-Atlantic Region	Down: up to 6 Mbps	Services to ISPs	N/A	Feb. 1997; rolling out to other regional markets throughout 1997
New Hope Telephone	New Hope, Owens Cross Roads & Grant, AL	Down*: 680 Kbps; Up: 270 Mbps	Internet/LAN Access	Market Trial: March 1998 in New Hope	Will begin offering ADSL services in June 1998 also in Owens Cross Roads & Grant
Northland Comm. (CLEC & ISP), through affiliate Onedia County Telephone	New York (Holland-Patent Central Schools)	Down: 1.5 Mbps; Up: 64 kbps	Internet/LAN Access	Tech. Trial: Feb. 1997	Plans to offer service to greater Utica/Rome and Syracuse later this year
Northwest Link (ISP)	Downtown Bellevue and Seattle, Washington	*1 Mbps in both directions	Internet/LAN Access	June - Dec. 1997	Began offering ADSL services in Jan. 1998 to businesses and academic institutions
OneNet Communications, Inc. (ISP)	Downtown Cincinnati, OH		Internet/LAN Access		Service launched December 1997
Rhythms NetConnections, Inc. (ISP)	San Diego, San Francisco Bay Area & Los Angeles, California	Down*:Up to 7 Mbps; Up: 192 Kbps or 1 Mbps in both directions	Internet/LAN Access and Remote File Backup	July 1997 - Jan. 1998	Rolled out ADSL in April 1998 to San Diego area businesses; will extend to San Francisco Bay Area and Los Angeles in June 1998; intends to expand into 30 metro markets by year-end 2000
SBC Communications, Inc. (ILEC) (through telephone subsidiaries Pacific Bell and Southwestern Bell)	200 communities in So. Calif. and including San Jose, San Francisco, Oakland, Anaheim, Los Angeles, San Diego, Sacramento	Res:Down 384Kbps; Up: 128Kbps SOHO:384 Kbps symmetrical Bus:384Kbps symmetrical or 1.5 Mbps down and 384 Kbps up	Internet/LAN Access	See the two entries below	Limited rollout Nov. 97 in San Francisco Bay Area, CA (Pacific Bell); and in Austin, TX (Southwestern Bell)
Pacific Bell (ILEC)	San Ramon, CA	Down: 6 Mbps; Up: 640 kbps	Internet Access/VoD	Aug. 96-Ongoing	
SBC Comm.	Houston, TX	Down: 6 Mbps;	Internet/VoD	Tech Trial:	

(ILEC) and Shell Oil		Up: 640 kbps		May 96-Ongoing; Mkt Trial: 7/96	
Signet Partners (ISP)	Austin, TX	Down: up to 6 Mbps	Internet/LAN Access		Austin in Jan. 1997; Houston and San Antonio by June 1997
Slip.Net (ISP)	Silicon Valley, CA	Down: 1.5Mbps; Up: 384kbps also 384kbps and 1.1Mbps in both directions	Internet/LAN Access	N/A	Launched Dec. 1997n Silicon Valley; San Francisco slated for Jan. 1998 rollout, with rest of Bay Area by mid-1998
SourceNet Corp. (ISP)	Northern Nevada	Down*: Up to 1.5 Mbps; Up: 384/640 Kbps	Internet/LAN Access	Early 1997	Rolled out ADSL Service in Feb. 1998
Sprint (IXC)	Charlottesville, VA		Internet/LAN Access		Tested ADSL by extending hospital's LAN and Internet access to several doctors' offices for transfer of critical, high-resolution medical image files
Teleport Communications Group (TCG) and DualStar Technologies	New York City, NY	Down*: up to 7 Mbps Up: Up to 1 Mbps	Internet/LAN Access, including multi-tenant buildings	Nov-97	Rolled out ADSL service to New York City residents in May 1998
Transport Logic (ISP), in conjunction with Advanced Corporate Solutions	Portland, OR	Down*: 640kbps-2.5Mbps; Up*: 275kbps-1.08Mbps	Internet/LAN Access	N/A	Apr. 97 for Portland; 4 more WA and OR cities by end of May
US West !nterprise (ILEC)	40 cities in 14 states by June 1998	Down*: 4Mbps; Up: 1Mbps, or Down*:1Mbps; Up 1Mbps	Internet/LAN Access	Tech trial ends Dec. 31, 1997	Plans to deploy ADSL services in more than 40 cities in 14 states during the first half of '98 for 5 million customers
	Phoenix, AZ	192kbps, 320kbps, 704kbps (HDSL)	Internet/LAN Access	N/A	Oct. 97-offering HDSL as a tarriffed service
	Phoenix this summer	Down**: Up tp 52 Mbps	Integrated Digital TV, Cable Programs & Internet Access		Will deploy VDSL in Phoenix this summer and expand to other markets in 1999
Valley Telephone Cooperative	Remote ranching area between San Antonio, TX & the Rio Grande Valley	*700 Kbps in both directions	Internet/LAN Access		Began deploying ADSL services for business, school and residential customers in March 1998
Verio Northern	San Francisco,	384 Kbps in both	Internet/LAN		1998 roll-out

California (ISP)	CA	directions; 1.1 Mbps in both directions; or Down: 1.5 Mbps/Up: 384 Kbps	Access		
Vitts (CLEC)	New Hampshire	Down: Up to 6Mbps	Internet/LAN Access, Video on Demand, Teleconferencing	N/A	Plans to expand to all of New England and New York
World Wide Internet Services Provider (ISP)	Birmingham, AL	Down*: Up to 6Mbps; Up: Up to 640kbps	Internet/LAN Access	Mkt Trial: Began Jan. 1998	Began offering ADSL service in Jan. 1998 as part of BellSouth's market trial

* Rate-adaptive ADSL
**Very high speed DSL

CANADA:

Company	Availability	Speed	Applications	Trial Dates	Service Deployment
BC TELECOM and 12 ISPs: Sympatico, Internet Direct, Internet Gateway, Smartnet, Bcnet, Island Internet, Pacific Interconnect, Ultranet, ABC Communications, Paralynx, Okanagan Internet Junction & Radiant Communications	Greater Vancouver and Victoria, Kamloops South, Nanimo, Kelowna, Vernon & Prince George, BC	Down*: 1.4 Mbps; Up: 160-640 kbps	Internet/LAN Access, Video Conferencing, Telecommuting	Tech/Mkt Trial: Nov. 96 - Nov. 97 Mkt Trial: Sept. 1997	Commercial service launched Jan. 1998 in partnership with 12 ISPs. ADSL service will be expanded throughout 1998 and 1999.
Bell Canada (ILEC)	Ottawa/Hull & Quebec City Areas	Down: 2.2 Mbps; Up: 1 Mbps	Internet/LAN Access	Customer Trial: Sept. 96-Ongoing in Kanata, ON and St. Bruno, Quebec	October, 1997 rollout in Ottawa/Hull & Quebec City areas to ISPs; will offer to businesses in 1998 and expand to Montreal and Toronto markets
CADVision (ISP)	Calgary, Alberta	Down*: 2.56 Mbps Up: 1 Mbps	Internet Access		Services launched Nov. 1996
CityTel	Prince Rupert, BC		Internet/LAN Access, Streaming Video, Distance Learning, Telemedicine and VoD	N/A	Service rolled out November 1997 with 1000 lines. Plans to fully deploy the service by mid-1998
Manitoba Tel Sys (MTS)	Winnipeg,	Down: 1.5	Internet Access,	Tech Trial:	December 15, 1997; by

	Manitoba	Mbps; Up: 64 kbps	Mutimedia, Interactive Video, VoD	Nov 1996-Ongoing	year-end 1998 90% of Winnipeg customers will be able to receive ADSL services. In March 1998 began venture with 4 ISP's and 12 computer stores, which have demo ADSL lines and act as one-stop shops
Maritime Tel. & Tel (MT&T)	Halifax, Nova Scotia	Down: Up to 7 Mbps	Internet Access	Tech Trial: Apr 1997-Ongoing	Nov. 1997 limited deployment; April 1998 full commercial deployment in Halifax. Will expand service throughout Nova Scotia in 1998-1999
New Brunswick Telephone Co.	St. John, Fredericton & Moncton	Down: 1.5 Mbps; Up: 64kbps	Internet Access	Tech Trial: Dec. 1996-Ongoing	Will roll out commercial service for residential customers in July 1998 and for businesses in August 1998
QuebecTel	Quebec	Down*: 640kbps-2.2 Mbps; Up: 272kbps-1 Mbps	Internet Access/LAN Access, VoD; Distance Learning		Services launched Sept. 1997
Quebectec (CLEC)	Rimouski, Quebec	Down: 640Kbps; Up: 272Kbps		Technical & Market Trials: Sept. 1997-Sept. 1998	Sept. 1998 in Rimouski. In 1999 service will be expanded to Sept-Iles, St. Georges, Baie-Comeau, Hauterive, Port Cartier, Gaspe & Matane
SaskTel (CLEC)	Regina, Saskatoon & Prince Albert	Down: 1.5 Mbps; Up: 64 kbps	Internet Access	N/A	Limited services launched Nov. 1996 in Regina & Saskatoon. Prince Albert added in Jan. 1998
Telus Communications and Telus Planet (ISP)	Edmonton and Calgary, Alberta	Down: 1.5Mbps; Up: 64kbps	Internet/LAN Access	Mkt Trial: Mar 1996-Ongoing	Oct.97; projects up to 2,500 subscribers by mid-1998

LATIN AMERICA:

Company	Availability	Speed	Applications	Trial Dates	Service Deployment
Companhia de	Brazil	Unknown	Internet/LAN Access	Trial	Sometime in 1997

Telefones do Brasil Central (CTBC)				currently underway	
Telebahia (Brazil), a subsidiary of Telebras holding company	Salvador, Bahia, Brazil	Up to 8 Mbps	Internet/LAN Access, VoD over IP (MPEG-1) & Audio on Demand over IP	Began trial in 1998	ADSL pilot project began Jan. 1998; other subsidiaries of Telebras holding co. will soon test ADSL as well
Telefonica de Argentina	Argentina	Unknown		Trials currently underway	

EUROPE:

Company	Availability	Speed	Applications	Trial Dates	Service Deployment
AMUSE**	Milan, Italy (Telecom Italia)	Down: 8.2 Mbps; Up: 640 kbps	VoD/Internet Access	Tech Trial began early 1997	
Belgacom (Belgium)	Antwerp, Brussels, Liege, Louvain & Mechelen	Down: 8Mbps; Up: 600kbps	Video on Demand	Market Trial begins Jan. 1998 with 1,000 customers	Not announced
British Telecom (UK)	Colchester & Ipswich (West London)	Down: 2 Mbps; Up: 384 kbps	Interactive Multimedia Services (VoD, etc.)	VoD/Interactive Multimedia Mkt Trial: Aug95-96; Data Mkt Trial Jan-June 1998	2000 homes & businesses to participate in latest market trial; next stages to be announced with Alcatel & Fujitsu in '98
Deutsche Telekom AG (Germany)	Nuremburg		Video and home shopping Internet Access & VoD	Pilot project began late summer 1997	Will roll out commercial services in 8 German cities later this year; plans to expand to 40 cities in 1999 and to more than 70 cities in 1999 and to more than 70 cities by 2002. Also conducting VDSL trials from 13-26 Mbps in both directions.
	North Rhine-Westphalia			Late September 1997	
DT/Westfalische Wilhelms-Universitat	Munster/Westfalen				
France Telecom (France)	Brittany	Down: 8 Mbps; Up: 640 kbps	Video on Demand	Mkt Trial: Nov. 96	Not announced
	Lannion		Multimedia, Digital TV and VoD		
Helsinki	Helsinki	Down: 2	Internet/LAN	Aug. 95 - Mar. 96	Began limited rollout

Telephone Co. (Finland)		Mbps; Up: 9.6 kbps	Access, multimedia, 3D virtual city, 'Net' phones and live video		Feb. 1997 in Helsinki. There could be 20,000 xDSL users by the year 2000.
Kingston Comm. - Hull (UK)	Hull		Video on Demand	Mkt Trial: Fall 97	Not announced
PTT Telecom (Holland); working w/Surfnet (ISP) & NOB Broadcasting	Amsterdam, Holland		Internet/LAN Access and VoD	Tech Trial: Dec. 1997-May 1998	Not announced
Swisscom (Switzerland)	Grenchen	Down: 2 Mbps; Up: 9.6 kbps	VoD/Internet Access	Sept. 95-Ongoing	Market trials set to begin in Zurich, Geneva & 3 other Swiss cities in 1998
Telecom Eireann (Ireland)	Ireland	Down/Up: 2 Mbps (HDSL)	Internet/LAN Access		Not Announced
Telecom Finland (Finland)	Finland		Internet/LAN Access	ADSL Trials to start soon	Beginning installation of ADSL equipment
Telecom Italia (Italy)	Turin	Down: 640 kbps to 2.24 Mbps; Up: 272 kbps to 1 Mbps	Internet Access and Video conferencing	Tech Trial: began early 1997; deployed in 15 central offices so far	Projects 1.5 million users by the end of year 2000 as part of Torino 2000
Telefonica Espana (Spain)	Madrid & Barcelona	Down: 6Mbps; Up: 640kpbs	Internet Access, Telenetworking, On-line services	Beginning Dec.1997	Not yet announced
Telenor A/S (Norway)	Oslo		Video on Demand	Jan. 96	
Telia AB (Sweden)	Stockholm		Internet Access, Video on Demand, Distance Leaning	Sept. 95; Market trial for residential and business users: Jan'97-May'98	Began commercial service launch in May 1998 to residential and business customers; plans to make ADSL available to all Swedish households by 2004

MIDDLE EAST/AFRICA:

Company	Availability	Speed	Applications	Trial Dates	Service Deployment
Bezeq (Israel Telcom)	Tel Aviv and Jerusalem	Down: 2 Mbps; Up: 9.6 kbps	Video on Demand	Tech Trial: April 96-Ongoing	

ASIA/PACIFIC:

Company	Availability	Speed	Applications	Trial Dates	Service Deployment
Chunghwa Telecom (Taiwan)	Central Taipei	Down: 1.5 Mbps; Up: 9.6 kbps	Near VoD/Remote Access	Mkt Dec. 96-Ongoing	
Guangdong PTA (China))		Rate-adaptive ADSL			System expected to be expanded to 4,000 lines by year-end 1998
Hong Kong Telecom (Hong Kong)		Down***: 51 Mbps; Up: 1.5 Mbps	Video on Demand	VoD: Summer 1996	Commerical rollout in July 1997; telco projects 250,000 users by year 2000
Ina-AINET (Agric. Assoc. of Ina City) w/Japanese UNIX Bus. Association (UBA), in partnership with Sun Microsystems, NEC, KDD, Sumitomo, Shinshu Univ. Community Area Network	Ina City, Nagano Prefecture	Down*: Up to 2.2 Mbps; Up: Up to 1 Mbps	Internet/LAN Access, Remote Learning, Video over IP	Sept. 1997-Ongoing	Not yet announced
Kawanakashima City Cable Broadcasting Agricultural Cooperative	Nagano Prefecture, Japan	Unknown		Feb. - March 14, 1998 (during '98 Winter Olympics)	Offering local information, news, Olympics information and other services
Korea Telecom (Korea)	Six cities including Pusan	Down: 4Mbps; Up: 128kbps	VoD/Internet/Distance Learning/Shopping	Mkt Trial: Aug. 96	Commercial rollout in early 1998; telco projects 3.5 million users by year 2000
NEC Corp. (project in China)	Shantou, Guangdong	Unknown	Internet Access/VoD	NEC plans to build an experimental multimedia network	Not Announced
Nippon Telegraph & Telephone (NTT)	Japan		Internet Access	February 1998 - November 1998	NTT will start testing ADSL in Feb. 1998 with about 15 major ISPs
Singapore Telecom (Singapore)	5,000 homes there by year-end 1997	Down: 8 Mbps; Up: 1 Mbps	VoD/Internet	Tech Trial: Feb. 96; Commercial trial began June 97	Expects 10,000 lines deployed in '97; island-wide rollout by the end of 1998; projects 80,000 subscribers by then
Telecom New Zealand	Khandallah &	640 Kbps		Commercial	Not yet announced